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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/698,246

10/30/2000

Dengwei Fu

1997.0010002

6241

7590

12/15/2005

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EXAMINER

DO, CHAT C

ART UNIT

PAPER NUMBER

2193

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/698,246

Applicant(s)

FU ET AL.

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-61 and 66-73 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 8-34, 46-53, 66-67, 69, and 71-72 is/are allowed.
- 6) ☒ Claim(s) 35-45, 54-61, 68, 70, and 73 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This communication is responsive to Amendment filed 09/16/2005.
2. Claims 1-4, 8-61, and 66-73 are pending in this application. Claims 1, 9, 16, 26, 35, 45, 46, 48, 50, 52, 53, 54, 56, 58, 60, and 61 are independent claims. In Amendment, claims 5-7 and 62-65 are cancelled and claims 69-73 are added. This Office Action is made non-final after a RCE filed 09/16/2005.

#### ***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 35-45, 54-61, 68, 70, and 73 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 35-45, 54-61, 68, 70, and 73 clearly recite a method for performing an angle rotator according to a mathematic algorithm. In order for such a claimed method to be statutory, the claims must include either a step or means that results in a physical transformation outside the computer and a limitation to a practical application. However, it is clear from the claims that the claims merely recite step or non-specific means for data computation and manipulation in performing a mathematical function. The claims are pure mathematical abstract idea. The input is a number and output is also a number.

Therefore, claims 35-45, 54-61, 68, 70, and 73 are clearly directed to a non-statutory subject matter.

*Allowable Subject Matter*

5. Claims 1-4, 8-34, 46-53, 66-67, 69, and 71-72 are allowed.
6. The following is an examiner's statement of reasons for allowance:

The prior art of records fails to disclose or render an obviousness of an angle rotator for rotating an arbitrary input complex number given an input angle comprising: a memory that stores a sine and cosine of  $\theta_M$ ; a first digital circuit performs coarse rotation on the complex number using sine and cosine of  $\theta_M$ ; and a second digital circuit that performs a fine rotations on the output of first digital circuit using fine adjustment angle as  $\theta - \theta_M$  as cited in independent claims 1, 9, 16, 48, and 50; or using  $\tan \theta_M$  and  $\cos \theta_M$  as cited in independent claims 26, 46, and 52; or generate a normalized input angle, determining whether it is in an even or odd quadrant or octant, selectively performing a 2's complement negate operation as cited in independent claim 53.

The closest found prior arts are Naofumi et al. ("Redundant CORDIC methods with a constant scale factor for Sine and Cosine computation") and Fox et al. (U.S. 5,276,633). Naofumi et al. in view of Fox et al. disclose a method of rotating a angle given an input angle. However, Naofumi et al. in view of Fox et al. fail to disclose implicitly a method of rotating an arbitrary input complex number comprising a memory for storing sine and cosine values for performing a coarse and fine adjustment as cited above.

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***Response to Arguments***

7. Applicant's arguments with respect to claims 35-45, 54-61, 68, 70, and 73 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

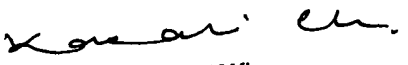
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do  
Examiner  
Art Unit 2193

December 12, 2005

  
KAKALI CHAKI  
SUPERVISORY PA  
NOLOGY CENTER